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M. McLean Clarke Esq.

*with the compliments of
The Author.*

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GEORGE'S CREEK

COAL AND IRON COMPANY.

1836.

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GEORGE'S CREEK
COAL AND IRON COMPANY.

1836.

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AN ACT

TO INCORPORATE

THE GEORGE'S CREEK MINING COMPANY.

Passed December session, 1835.

SECTION 1. *Be it enacted by the General Assembly of Maryland,* That John H. Alexander and Philip T. Tyson, and such other persons as may hereafter become associated with them in the manner herein provided, shall be and they are hereby incorporated and made a body politic and corporate, by the name of the George's Creek Mining Company, and by that name shall have succession, and shall be able to sue and be sued, plead and be impleaded, and to make and use a common seal and the same to alter and renew at pleasure: and the said company shall have full power and authority to open and work such mines of coal, iron and other minerals as may exist in the tract of land on George's creek, called Commonwealth, now owned by them, and such other lands not exceeding the quantity of ten thousand acres, as the company hereby incorporated shall hereafter acquire; and on such lands to erect and carry on mills and manufactories of iron or other products of said lands or mines, in order to prepare the same for market; and for the more ready transportation of such produce, to survey, locate, establish and construct a Rail road or roads from the mines or other works of the said company, to some convenient point or points on George's creek or the Potomac river, near the mouth of George's creek, and the same with its necessary appurtenances to keep in continual use and repair, and to have and exercise such other powers and authorities as are necessarily incident to corporations, and may be necessary for the specific purposes aforesaid.

SEC. 2. *And be it enacted,* That the capital stock of said company shall consist of three thousand shares of one hundred dollars each, in addition to the aforesaid lands of said John H. Alexander and Philip T. Tyson, which shall be subscribed and constitute part of the capital stock or property of said company, at a price to be made known by the commissioners authorized to receive subscriptions to the capital stock of said company, at the times of receiving

such subscriptions; and which price or value shall be estimated and fixed by disinterested persons, one of whom shall be appointed by the Governor—one by the above named proprietors, and the third by these two; and who or a majority of them, shall estimate and fix, on oath, the value of said lands, and make return thereof in writing to the said commissioners, before they shall receive any subscriptions to the said capital stock.

SEC. 3. *And be it enacted*, That the subscriptions to the capital stock of the said company shall be received under the direction of commissioners to be named by the said John H. Alexander and Philip T. Tyson, and approved by the Governor, at Cumberland, and at such times and places as the said commissioners or a majority of them shall designate, after giving at least ten days notice thereof in some one or more of the newspapers printed in the city of Washington and the city of Baltimore, and the town of Cumberland, and elsewhere, if they may deem it necessary; and each subscriber at the time of subscription, shall pay to the said commissioners the sum of ten dollars on each share subscribed for by him, which shall be paid over to the company as soon as conveniently may be after its organization by the election of its President and Directors.

SEC. 4. *And be it enacted*, That if more than three thousand shares shall be subscribed for as aforesaid, to the capital stock of the company, the aforesaid commissioners or a majority of them shall reduce the number to three thousand shares, by striking off from the largest number of shares held by any individual, in succession, until the subscriptions shall have been reduced to the said number of three thousand shares, or every subscription reduced to one share, or to an equal number of shares, and if there be still an excess, then lots shall be drawn to determine who shall be excluded.

SEC. 5. *And be it enacted*, That the management of the business and concerns of the said company, shall be vested in three directors who shall be stockholders and citizens of the United States, any two of whom shall be a quorum for the transaction of business, and the first Board of Directors shall be elected by the stockholders, under the superintendence of the commissioners aforesaid, at such time and place as they or a majority of them shall designate, after giving at least twenty days previous notice thereof, in one or more of the newspapers, printed in each of the cities of Baltimore and Washington, and the town of Cumberland, and the subsequent elections of directors shall be made annually thereafter, and after a like previous notice, at a general meeting of the stockholders to be convened for the purpose, at such time and place as may be fixed by the by-laws of the company, or the directors in conformity therewith, but if any election of directors should not be made on the day when it ought to be made, such election may be made after like notice at any time within six months thereafter, and the President and Directors for the time being, shall hold and exercise their offices until a new election be made, and in all elections and all questions touching the business or concerns of said company, each share shall be entitled to one vote.

SEC. 6. *And be it enacted*, That every Board of Directors at their first meeting after their election, or as soon thereafter as practicable, shall appoint one of their own number to be President of said company, and shall in the same manner appoint a treasurer and such other officers, and agents as may be deemed necessary for managing the affairs of the company, who shall hold their offices at the pleasure of the said President and Directors, and who shall give such security as may be prescribed by the by-laws of the said company, and every director of said

company, its treasurer and such other officers as may be required to take the same by the by-laws of the company, shall take an oath, or affirmation as the case may be, that they will honestly and faithfully perform the duties of their respective offices.

SEC. 7. *And be it enacted*, That the capital stock of the said company shall be deemed personal property, and may be transferred on the books of said company in such manner as its by-laws shall prescribe, but all debts due the company by the stockholders wishing to make the transfer, and all out-standing engagements on which he is then liable to the said company, shall be paid or satisfied out of said stock or otherwise, before any transfer of said stock shall be made, or any dividends thereon paid, except by the special permission of the President and Directors: and after the organization of the company, the amount due on the subscriptions to its capital stock shall be paid in instalments at such times as the President and Directors may require, they giving at least thirty days' previous notice of the time and place appointed for the payment of the said instalment, in at least one newspaper, printed in each of the cities of Baltimore and Washington, and the town of Cumberland; and in default of payment of any instalment, the President and Directors may offer at public sale the shares of the stockholder so making default, or so many thereof as may be sufficient to discharge his default, and the purchaser thereof shall hold the said stock, subject to the same regulations, and with the same rights, as if they had been originally subscribed for by him.

SEC. 8. *And be it enacted*, That the President and Directors of said Company, may agree with the owner or owners of any land, or any interest in the same, or of any earth, timber, or stone, which may be wanted for the construction or repair of the Rail road or roads hereby authorized to be made; and if they cannot agree, or if such owner or owners be a feme covert, non compos mentis, under the age of twenty-one years, out of the state or county, or unknown, then on application of the said President and Directors, or their agent, to any justice of the peace of Allegany county, the said justice shall issue his warrant under his hand and seal, to the sheriff of the said county, to summon a jury of eighteen inhabitants of said county, not related to the parties, nor interested in the property to be valued, to meet on or near the property so to be valued, at a day named in the warrant, not less than ten, nor more than twenty days after the issuing of the same; and the said sheriff shall, on its receipt, summon the said jury accordingly; and when the jury meets, or twelve or more attend, shall qualify all attending as jurors, by administering to them before they act as such, an oath or affirmation, as the case may be, that they will justly and impartially value the damages which such owner or owners will sustain by the taking of the property required by the company; and if at least twelve do not attend, the sheriff shall immediately summon as many more as may be necessary to make up that number, and shall then qualify the jury in manner as aforesaid; and the said jury in estimating said damages, shall consider the benefit which will accrue or has accrued to such owner or owners, from the construction of the Rail road, for which the property to be valued is wanted, and to make the proper allowance for such benefit in their verdict: and the inquisition thereupon taken, shall be signed by the sheriff and at least twelve of the jury, and returned by the sheriff to the office of the clerk of Allegany county court, and unless good cause be shewn against it, the said inquisition shall be affirmed by the said county court, at the term after it is returned, and shall then be recorded by the said clerk, among the land records of

said county ; but if any such inquisition be set aside, the said court may in its discretion, as often as may be necessary, direct another to be taken and returned, which shall be confirmed as aforesaid ; and every such inquisition as to land, shall ascertain the bounds of the land so valued ; and the valuation when confirmed by the court, shall be conclusive against the parties, and be paid by the said President and Directors to such owner or owners, or his, her or their legal representatives ; and when paid or tendered, shall entitle the said company to all the estate or interest of such owner or owners in the property so valued ; and if the valuation be refused when tendered, or the party to whom it is due be unknown, it may afterwards be recovered of said company, without interests or cost.

SEC. 9. *And be it enacted*, That as soon as a valuation shall have been made by a jury in the manner prescribed in the preceding section, the said President and Directors, or their agents, may immediately enter upon, take and use the property so valued, and such valuation when confirmed shall be a bar to all actions by the person or persons against whom such valuation is made, for so entering upon and using the said property after such valuation is made.

SEC. 10. *And be it enacted*, That the said Rail road when completed, shall be and the same is vested in perpetuity in the company hereby incorporated ; and full power and authority is given to said company to regulate the use thereof, and to exact and receive such toll or duty for the transportation of property and persons thereon, as in its discretion may seem proper ; *provided*, the toll on said Rail road or roads shall not exceed one cent per ton, per mile, on all coal, merchandise or other property, transported on said Rail road or roads ; nor more than two cents per mile for each and every passenger so transported on said Rail road or roads ; *provided, nevertheless, and be it enacted*, that full authority is hereby reserved to the citizens of this state, and any and every company now or hereafter to be incorporated, by authority of this state, to connect any other Rail road with the Rail road herein provided for, if in forming such connection no injury would be done to the Rail road of the company hereby incorporated, that to be determined on by the commissioners of Allegany county, and that the Legislature of this State at any time hereafter, may regulate, modify or change the control, use and estate of the Rail road hereby authorized to be made, in such manner as may be equitable towards the company, and necessary to the accommodation of the public travel and use of said road ; and from time to time to regulate and prescribe the rate or tariff of tolls to be received by the company hereby incorporated, for the transportation of persons or property on said Rail road, so that nevertheless the nett profits to be received by said company, for the use of said road, after payment of the necessary expenses of transportation, repair and improvement of said road, shall not be reduced below six per cent. on the cost of the construction thereof and its appurtenances ; and it shall be the duty of said company to make annual returns to the Treasurer for the Western Shore, of the cost incurred in the construction of the said Rail road and its appendages, and of the expenses thereof, and of the amount of tolls received for the preceding year.

SEC. 11. *And be it enacted*, That this act may be repealed or altered at the pleasure of the Legislature, at any time after the year eighteen hundred and seventy, excepting so far as relates to the Rail road aforesaid, and the property therein ; and at any time after said year this act may be entirely repealed, and the said Rail road vested in the state, on a reasonable compensation being provided and rendered to the said company for its interest therein, and the powers

hereby granted for the construction of said Rail road may be revoked, unless the said Rail road shall be fully completed for use within four years from the completion of the Chesapeake and Ohio Canal to Cumberland.

SEC. 12. *And be it enacted*, That this act, nor no part thereof, shall be so construed as to give the said corporation any banking privileges.

We certify that the foregoing is a true copy of the act, entitled 'An act to incorporate the George's Creek Mining Company,' which passed the General Assembly of Maryland, at December session, one thousand eight hundred and thirty-five.

Given under our hands at the city of Annapolis, this fourth day of April, one thousand eight hundred and thirty-six.

JOSEPH H. NICHOLSON, *Clerk of the Senate of Maryland.*

GEORGE G. BREWER, *Clerk of the House of Delegates of Maryland.*

MARYLAND, Sct.

At an Extra Session of the General Assembly of Maryland, begun and held at the city of Annapolis, on the fourth Monday of May, being the twenty-third day of the said month, in the year of our Lord one thousand eight hundred and thirty-six, and ended the fourth day of June, one thousand eight hundred and thirty-six:

HIS EXCELLENCY, THOMAS W. VEAZEY, ESQUIRE, GOVERNOR:

Amongst others the following law was enacted, to wit:

No. 382.

A SUPPLEMENT TO THE ACT

TO INCORPORATE

THE GEORGE'S CREEK MINING COMPANY.

SEC. 1. *Be it enacted by the General Assembly of Maryland*, That the company incorporated by the act to incorporate the George's Creek Mining Company, passed at December session, eighteen hundred and thirty-five, chapter three hundred and twenty-eight, shall be, and hereby is authorized immediately on its organization to assume the corporate name of The George's Creek Coal and Iron Company.

SEC. 2. *And be it enacted*, That the business and concerns of said company, shall be under the management of nine directors, who shall be stockholders and citizens of the United States, any three of whom with the President shall be a quorum for the transaction of business.

SEC. 3. *And be it enacted*, That so much of the original act to which this is a supplement as requires the Rail road or roads to be constructed by the said company to be terminated on the

Potomac river, at or near the mouth of George's creek, shall be, and the same is hereby repealed, but nothing herein contained shall confer on the said company the power to interfere with the improvement of the Potomac river, above Cumberland, in the manner proposed by the act to incorporate the Union Company, passed at December session, in the year eighteen hundred and thirty-five.

SEC. 4. *And be it enacted*, That the stock of the said company shall be transferable on the books of the company, at such places and in such manner as its by-laws shall prescribe.

SEC. 5. *And be it enacted*, That the price or value of the lands which shall be subscribed as capital stock of said company, shall be divided into shares of one hundred dollars each, and said shares shall be taken to be personal property, and shall be voted on and transferable as other capital stock of said company.

SEC. 6. *And be it enacted*, That Charles Oliver of the city of Baltimore, shall be, and he is hereby authorized to subscribe the lands now owned by him in Allegany county, or any part thereof, as part of the capital stock of the said company, at a price or value which shall be estimated and fixed by the persons, at the time and in the manner provided by the original act for the valuation of the lands of the said John H. Alexander and Philip T. Tyson; *provided*, that at any time after five years from the completion of the Chesapeake and Ohio Canal to Cumberland, it shall not be lawful for the said company to have, hold or retain a greater quantity than ten thousand acres of land, over and above the lands now owned by the said John H. Alexander and Philip T. Tyson, and which may be subscribed by them to the capital stock of said company.

SEC. 7. *And be it enacted*, That this act shall not be so construed as to prevent any company hereafter formed to connect any Rail road or roads with said Rail road.

By the House of Delegates, June 4th, 1836. This engrossed bill, the original of which passed the House of Delegates, June 1st, 1836, was this day read and assented to.

By order,

GEORGE G. BREWER, *Clerk*.

By the Senate, June 4th, 1836. This engrossed bill, the original of which passed the Senate, May 31st, 1836, was this day read and assented to.

By order,

JOSEPH H. NICHOLSON, *Clerk*.

THE GREAT
SEAL OF
THE STATE

THOMAS W. VEAZEY.

MARYLAND Sct.

I hereby certify that the foregoing is a full and true copy taken from the original engrossed bill, deposited in and belonging to the Office of the Court of Appeals for the Western Shore of said State.

SEAL.

In testimony whereof I hereunto subscribe my name and affix the seal of the said Court of Appeals, this seventh day of June, in the year of our Lord one thousand eight hundred and thirty-six.

JOHN JOHNSON, *Clerk of the Court of Appeals, W. S.*

N^o 1.

Topographical Illustrations
exhibiting the *CONNECTIONS* of the lands
of the
"GEORGE'S CREEK COAL AND IRON COMPANY"
with the
CANAL-IMPROVEMENTS
of the
POTOMAC



No. 2.

BB 4771 S 1/2 1/2 1/2 1/2

Being a part of the Lands

of the

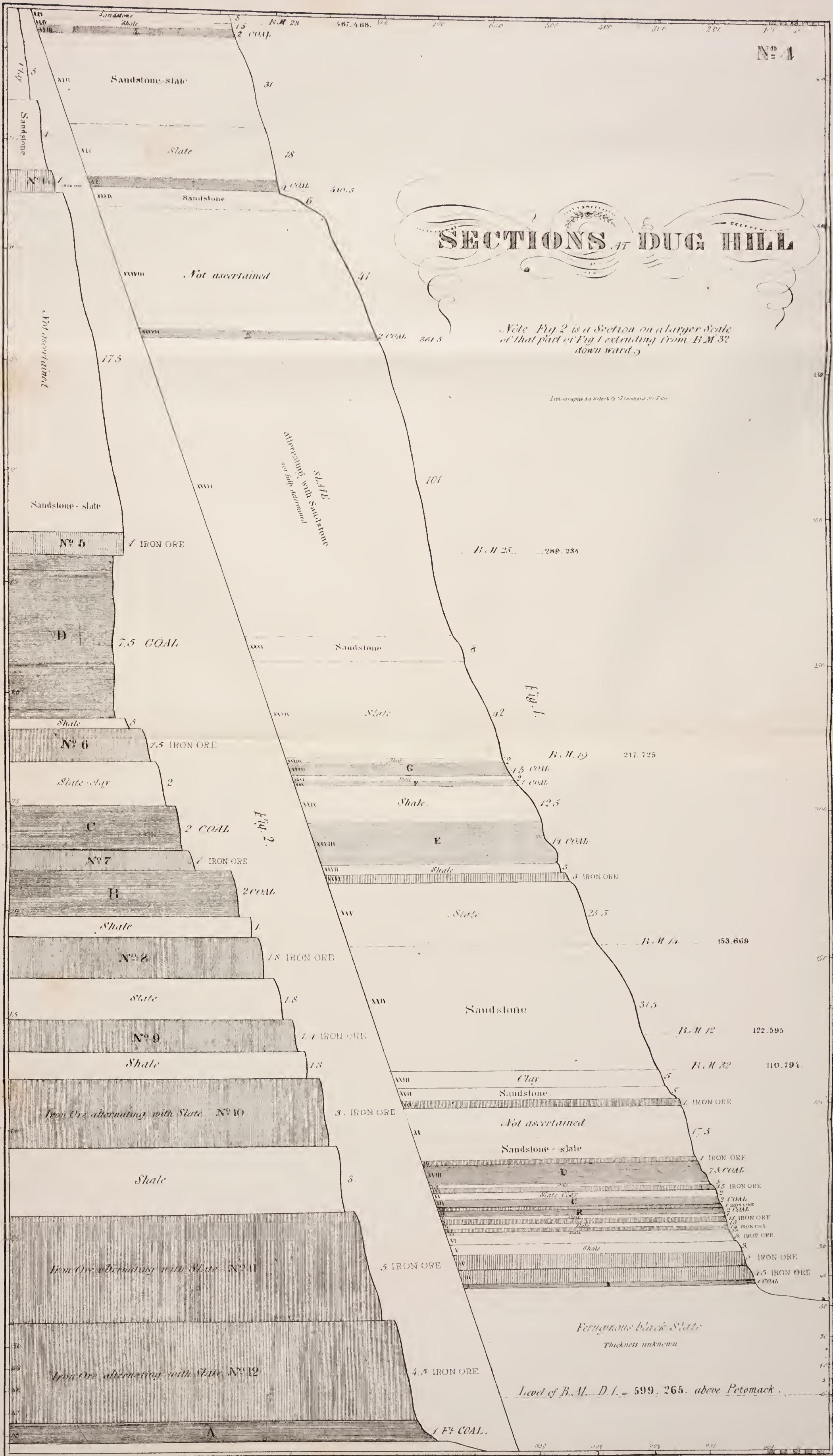
GEORGE'S CREEK COAL & IRON COMPANY.





CHOROGRAPHIC MAP
of a part of the COAL-BASIN belonging to the
GEORGE'S CREEK COAL & IRON CO.



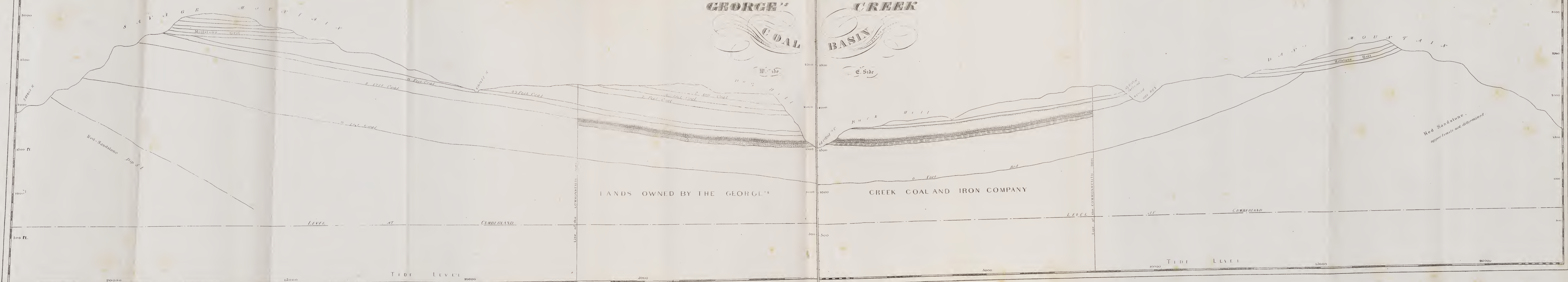


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GEORGE'S COAL

CREEK BASIN

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The foregoing charters were obtained from the Legislature of Maryland under the impression, which a slight inspection of the land had produced, that the deposits of coal and iron existing there were of sufficient extent to warrant the not at all magnificent investment of capital which was then planned.

The Undersigned have, since, in accordance with the plan which they then marked out for themselves, more thoroughly examined the features, topographical and geological, of one part of their property; and although ample room is left for a thousand details of investigation yet untouched or but slightly brought out, they believe they have arrived at a proper point to lay before the scientific, inquiring and candid, results sufficiently satisfactory to warrant the prosecution of the ulterior objects which they held up to their own view at the time of acquiring the property. These results they embody now briefly in the present Memoir.

As nearly the whole of them are capable of being expressed geometrically, there have been prepared as an accompaniment, Maps numbered from 1 to 6 progressively: an explanation of which, separately, will form the best introduction to the views which are to be detailed in the course of the report.

No. 1. is intended to illustrate the position of the two tracts of land belonging to the Company, with reference to the country generally; and the facilities for communication between every part of these tracts and the commercial markets where the value of the minerals and their products is to be tested and acquired. Of course a part only of this map is to be considered as rigidly correct, because a part only has been reduced from actual measurements; but the remainder has been compiled from the best sources which were at the time available, and the slight inaccuracies that have crept in will not at all interfere with the truth of the calculations which have been based upon the actually existing configuration of the soil.

The lands of the George's Creek Company then, whose outlines are traced in broken and dotted lines, lie principally in the valley of George's Creek and on the eastern slope of the Great Savage or Allegany mountain. The valley of this creek is a deep trough, inclined to the horizon at about 65 feet per mile (or two-thirds of a degree) and extending N. E. and S. W. between the Savage and Dan's mountain, whose summits are from 1500 to 2000 feet above the debouche into the Potomac valley. The water maintains a tolerably direct course during its entire flow of about seventeen or eighteen miles—and all along the margin are flats varying in width from one hundred yards to half a mile, and in elevation from two to forty feet above the creek.

The discharge of the creek, below the mouth of Koontz's run, and near the southern beginning of the Commonwealth tract, was found in June last to be 216,000 cubic feet per hour. This is supposed to be about an average discharge, and establishes fully its character for adaptation to purposes of machinery within sufficient limits. It was supposed by some who had

examined it, that a slack-water navigation might be effected at a proportionate expense, but the undersigned have had no occasion to institute any examination with that view.

The character of the slopes of the mountains bounding this valley, particularly on the north side, is very much marked in an alternation of steep ascents and benches, which continue nearly along the whole slope. A feature of importance is presented in these benches, as suggesting the direction and basis for roads which might be required in different places along the mountain sides. Numerous tributaries to the creek pierce these sides to a great depth, and afford easy opportunities for investigating the mineral contents of the mass of the mountain.

The trough is closed up on the eastern side by a low saddle or col, of not more than half a mile, separating the waters of Neff's Run, an important tributary of the Creek, from Preston's Branch, which flows into Braddock's Run, and under that name continuing on the north side of the National Road joins Will's Creek not very far above Cumberland. The lines of the Commonwealth tract go, as is seen, very near to the copious head-spring of Neff's Run.

The more western arm of the trough reaches far round to the north-west of Frostburgh, until it rests against the saddle dividing George's Creek from Jennings's Run, which as well as Braddock's Run is a tributary of Will's Creek.

The characteristic expression of the summits of the mountains which form the edges or rim of this trough has been, as far as could be, preserved, i. e. that of a persevering and nearly horizontal ridge. In the Savage, however, will be seen, and within the lines of the Beatty's Plains tract, two depressions; the southern one, near the head of Mill Run—the other, near the head of Laurel Run. How far these could be made available either for the uses of the Company, or for the purposes of the great line of projected communication between the Chesapeake and Ohio, remains to be investigated.

It will be observed that Dan's Mountain begins to fall off at a distance of three or four miles north of the Potomac—and presents the appearance of a gently sloping country, broken in two or three places by important depressions. These are indicated on the map near and opposite to the mouths of Mill and Bartlett's Runs.

The eastern slope of this mountain does not continue to the margin of the Potomac, but between Dan's Mountain proper, and the river, a range of limestone hills upraise themselves, forming a distinct though elevated valley. It is supposed that this valley may be of important application in some of the subsequent operations of the Company: and in another part of this report will be referred to more in detail.

The variation of the magnetic from the celestial axis, though not a matter of very great moment for present purposes, was yet ascertained, and is exhibited on the map.

The broken line which is extended from the Potomac near the mouth of Savage, to a point near the head of Braddock's Run, and cuts the meridian at an angle of about 30° is the base of a geological profile exhibited in a subsequent map, and will be hereafter referred to.

No. 2. is, as will be readily understood from the title, a map upon a larger scale of the outlines and topography of the S. W. tract of the Company. The stiffness and harshness of the outlines, and the deep glens with which the mountain is cut, were not intentionally exhibited, but arise from some defect in the lithography. The preconcerted arrangements of the

undersigned, which had marked out this as the period for the publication of their results, did not allow of the time which would have been necessarily consumed in cancelling the already finished drawing and making a fresh one.

On this tract the investigations have not been at all detailed, for two reasons: first, the fecundity of interesting matter on the Commonwealth tract so far exceeded any previous calculation that too much time would have been consumed in making examinations elsewhere, to have allowed the present publication at this time; and secondly, inasmuch as one-twelfth part of the tract is held by a minor as tenant in common, the peculiarity of whose circumstances, or some other cause with which the public cannot be expected to trouble itself, has prevented hitherto the transfer of that portion to the Company, or its severance. When that shall be accomplished, the surveys will be made as detailed as heretofore; but in the present report nothing pertaining to that tract, except its extent and position, has come in as a basis of calculation.

No. 3. is the map of the Commonwealth tract, exhibiting, as nearly as possible, the configuration of the ground, by means of horizontal curves, and also the principal coal beds. It was intended to have indicated also the beds of iron ore; but the scale of the map is necessarily so small as to render such a complication of lines dangerous and confusing. The parallel lines indicate the direction of perfectly level planes, which are supposed to cut the ground at elevations of every twenty feet, starting from the level of the creek near the mouth of Koontz's Run, and close by the place where, as before said, the gauging of June last was made. This method of exhibiting the contour of the ground is the same with that adopted in the maps published to illustrate the reports on the trigonometrical survey of Maryland: in which reports, if necessary, a more detailed explanation of the object and uses of these horizontal curves can be found.

The information from which this map was compiled was derived from a triangulation made on a regularly measured base and requiring the observation of all the angles. The details were then filled up with the plane table and the eye; checked by compass-lines and lines of level which were run up the creek itself as well as all the tributaries. The minute topography was further obtained by noting the running of the boundary lines, which was performed by the County surveyor.

The lines of the eight feet and four feet beds of coal have been traced by connecting several known points where the coal had been opened and where a line of levels had passed: the known regularity of such formations justify, it is believed, the inference that its deposit is continuous.

No. 4. exhibits a section of the excavations which have been made at Dug Hill—a local name given to that spur of the Savage mountain, adjoining to and on the N. E. side of Koontz's Run. This is so favorable a position for investigating the mineral character of the Company's lands, that a more detailed explanation of this map, than has hitherto been given of the others, will, it is thought, be interesting.

A series of excavations were carried from the base of the hill upwards so as to expose the most important beds of coal, iron ore, &c. for a vertical height of five hundred feet. The

different beds, which may be distinguished on the map, will be briefly noticed according to their order of position, commencing with the lowest.

1. *Hard black Slate*; having a specific gravity of 2.824; it probably contains 15 or 18 per cent. of iron.
2. *Coal*; 1 foot thick, marked (A): the quality was not examined, but it closely resembles (B) and (C).
3. *Iron Ore*; in bands from 1 to 4 inches thick, alternating with a soft slate or slate clay.

The whole thickness of this bed is 4.5 feet, of which the ore constitutes about 1.5 ft.; the ore appears exactly similar to No. 11.

4. *Iron Ore* (No. 11); in bands varying in thickness from 2 to 4 inches. It alternates with a slate somewhat more indurated than the last, but the ore is of the same character; it is moderately hard, nearly black in color, and has a specific gravity of 3.433. A chemical analysis gave the following results.

Protoxide of Iron:	45 = 35.5 Iron.
Silica:	15.
Lime:	1.
Carbonic Acid:	27.5
Alumina:	9.
Water and loss:	2.5
	<hr/>
	100.

It constitutes about two feet of the thickness of the bed.

5. *Shale*; 3 feet.
6. *Iron Ore* (No. 10); alternating with slate 3 feet: the bands of ore except one, which is five inches, are thin; this ore is rather harder than No. 11, although it yields to the knife: the colour is dark gray. It has not been analysed, but having a specific gravity of 3.374, it may be inferred to contain at least 33 per cent. of iron. The structure is fine grained, and it probably contains more lime than the last.
7. *Shale*; 1.3 ft.
8. *Iron Ore* (No. 9); constituting a bed or stratum 1.4 ft. in thickness. Its specific gravity being (3.374, exactly that of No. 10:) it probably contains about the same proportion of iron; in external characters it strongly resembles No. 11.
9. *Slate*; 1.8 ft.
10. *Iron Ore* (No. 8); 1.8 ft. thick, it is rather hard, of a gray colour, having a specific gravity of 3.473, contains probably 35 to 40 per cent. of iron, and is slightly calcareous. It will prove a very valuable ore.
11. *Shale*; 1 foot in thickness.
12. *Coal* marked (B); 2 feet thick. It is what is termed a strong dry coal, burning with all the intensity of heat which characterizes anthracite, while it is free from the difficulties in kindling and managing the fire attendant upon the latter. It consists of Carbon 85: Bitumen, &c. 15: and has a specific gravity of 1.584, which nearly equals that of Anthracite. Its fragments are cubic.

13. *Iron Ore* (No. 7); 1 foot thick. It is of a bluish-black color, and has a specific gravity of 3.541, and contains probably more than 40 per cent. of iron; it is the richest of the Dug-hill ores.

14. *Coal*; marked (C); 2 feet thick—similar to (B) in appearance, but contains rather less carbon*; its specific gravity is 1.525, and it consists of

Carbon :	81.16
Bitumen, &c.	18.84
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	100.00

15. *Slate Clay*; 2 feet in thickness.

16. *Iron Ore* (No 6); 1.5 feet thick. This ore strongly resembles some specimens from Wales. It is moderately hard, has a bluish gray color and a fine grained texture, with calcareous spar irregularly interspersed through the mass. The specific gravity of those portions, free from the spar, is 3.255, and an analysis of a similar portion gave

Protoxide of Iron :	42. =	33 Iron.
Silica :	13.	
Lime :	7. \times	
Carbonic acid :	26.	
Alumina :	4.	
Water, Bitumen, &c.	8.	
	<hr/>	
	100.	

17. *Shale*; 6 in. thick, forming the floor of the 8 feet coal bed.

18. *Coal*; marked (D.) called the 8 feet bed which it measures in most places, although it is but 7.5 feet at this opening. The specific gravity is 1.552, it is firm with a cubic fracture, and is highly spoken of by the blacksmiths. It consists of

Carbon :	80.08
Bitumen, &c. :	19.92
	<hr/>
	100.

19. *Iron Ore*; (No. 5,) 1 foot thick. Whether this deserves the name or not, depends upon circumstances; its specific gravity is 2.946, indicative at all events of a poor ore, when an abundance of better ores are at hand: perhaps it may be advantageously used in conjunction with the hematitic or nodular oxides of iron yet to be noticed.

20. A space embracing 17.5 feet in height, of which the lower portion is sandstone-slate, or a sandstone partly composed of finely divided earthy matter; the upper portion of this division has a thick covering of the results of the decomposition of the superincumbent rocks. It was not deemed necessary to penetrate to the undisturbed rocks for the present.

21. *Iron Ore* (No. 14.) This is the nodular argillaceous oxide of iron, and is imbedded in clay, supposed to be 1 foot in depth; probably the ore occupies the greater portion of the space, but as such ores are not always continuous like those already spoken of, the bed was not

* Slight traces of sulphuret of Iron are found both in (B) and (C.)

penetrated sufficiently far to determine the quantity or proportion. This ore is richer in metal than those already noticed;* it is of a variety that produces very superior iron, and will merit, as well as No. 15, further examination hereafter.

22. *Sandstone*, fine grained; 5 feet thick.
23. *Clay*; 5 feet in thickness. Not particularly examined.
24. *Sandstone*; 31.5 feet. This is a solid material, very uniform in its appearance and free from foreign matter. It is expected to answer for the hearths of furnaces.
25. *Slate*; 23.5 feet.
26. *Nodular Iron Ore*, (No. 15;) in a bed of clay 3 feet thick, precisely similar to No. 14. The bed was not penetrated far, but the ore did not seem to occupy so great a proportion of the bed as No. 14 did of space 21.
27. *Shale*; 3 feet.
28. *Coal*; marked (E.) 14 feet. This is the main coal bed of this district, and has been opened in three places on the lands of the Company; in two of them, viz: the Dug Hill and Neff's Run Mines its thickness is 14 feet, while at the mines on Koontz's Run it reaches 15 feet. Its specific gravity is 1.386, being much less than that of the lower beds, its fracture is rather uneven, slightly approaching to cubic. It strongly resembles some of the best Welch coals, and is composed like them of alternations of two different varieties, one having a high lustre, and the other (in smaller proportion) having the hardness and dull appearance of Cannel coal. It swells but slightly in coking, so as to experience but little change of form, and cakes together. It consists of

Carbon:	79.25
Bitumen, &c.:	20.75
	<hr/>
	100.

The quality of this coal is unequalled by any that can be transported so cheaply to tide water, and must soon come into extensive use. There seems in it exactly that happy proportion of carbon and volatile matters to render it easy to be kindled; while the combustion is so perfect that it can scarcely be said to produce the least smoke. When first ignited there is sometimes a slight appearance of smoke, going off with the vapor from water which is always found in coal. It does not soil the fingers; and leaves a very small proportion of white ashes—a proof of its being free from sulphuret of iron. Several bushels were ignited and water thrown thereon, without producing the least odor of sulphur.

29. *Shale*; 12.5 feet.
30. *Coal*; marked (F.) 1 foot. Not sufficiently penetrated to determine its quality.
31. *Shale*; 2 feet.
32. *Coal*; marked (G.) 4.5 feet. This bed was not sufficiently explored to determine its quality. Its appearance indicates so much resemblance to the celebrated Cannel coal that it should be hereafter carefully examined.
33. *Shale*; 2 feet.

*The ores from No. 5 to 12, inclusive, are all of the variety usually met with in coal formations, and are called in England 'Iron stone,' 'Clay Iron stone,' and 'Argillaceous carbonate of iron.'

34. *Slate*; 42 feet.
35. *Sandstone*, (hard;) 8 feet.
- 36 This embraces a space of 101 feet, but partially examined; where the undisturbed strata were reached, slates and slaty sandstones appeared. The latter seemed to predominate in the lower part, and were micaceous.
37. *Coal*; marked (H.) but partially examined; it was estimated to be 2 feet thick.
38. A space of 41 feet, with so thick a covering of detritus that the regular strata were not reached. Fragments of limestone were found.*
39. *Sandstone*, fine grained; 6 feet.
40. *Coal*; marked I. estimated at 4 feet.
41. *Slate*; 18 feet.
42. *Sandstone-Slate*; 31 feet.
43. *Coal*; marked K. estimated at 2 feet.
44. *Shale*; 1.5 feet.
45. *Sandstone*; thickness unknown.

Above this point, the acclivity of the hill being more gentle and having a thick covering of detritus, the diggings were suspended; the more willingly, after having ascertained the existence of the immense beds of coal and iron ore nearer the base of the hill.

No. 5 and No. 6, are sections supposed to pass nearly at right angles to one another, through the valley and adjacent mountains. They have been constructed with care from the levels which have been taken, and depend upon the connections of a good many established points. They may be supposed to exhibit with considerable accuracy, the arrangement of the strata of the coal basin of George's Creek, so far as the Company's lands are concerned—every thing outside of their boundaries (which are marked on both maps) has been established by inference.

The projection in No. 5, is made on a plane passing through Dug Hill, the spur of the Savage, N. E. of Koontz's Run, and Buck Hill, a spur of Dan's Mountain on the N. E. side of Hill's Run. All the strata of coal and iron which have been developed, are exhibited on this map, the first by firm, the latter by broken lines, in their proper order of super-position: but the scale did not allow of any proportionate thickness being taken. For that, reference must be had to map No. 4. Pains have been taken, by the inscription of scales, both horizontal and vertical, to make every thing as plain as possible, and to save the necessity of a verbal repetition.

The plane of No. 6, passes nearly in the direction of the broken line, which has been already mentioned, in speaking of map No. 1. The state of knowledge in regard to the country outside of the Company's tracts, was not sufficiently detailed and exact, to allow of a precise profile being constructed: so that it was necessary to go sometimes a little on one side, and sometimes on the other, to make use of facts which had been acquired. It is believed, however, with this explanation, that the map will be very interesting in shewing the peculiarity of

* It is stated that fragments of limestone were met with, and that none was found *in situ* at Dug Hill. There are two beds of limestone in the district which may be readily uncovered at Dug Hill, and at many other points on the lands, but it was thought unnecessary to do so at present.

the position of the Company's lands, and in illustrating generally (what the undersigned will confess, *they* never understood before) the characteristics of the immense coal formation. The 8 and 14 feet beds have been continued all along this profile, under the letters D and E, which are attributed to them both in the Commonwealth map No. 3, and in the section No. 4. On the map No. 3, these letters indicate the points where the coal has been opened: and thus afford a pledge of the authority upon which the tracing of the lines has been continued.

The analysis and quality of the iron ores and of the coal of which it was first intended to make a separate chapter, have been already given, (more in natural connection it is believed:) and it is therefore needless to repeat them here. It will be sufficient to remark, as has already been mentioned in a note, that all the iron ores are those which belong to the regular coal formations and corresponding with the French *fër carbonaté lithoïde*. The stratified, are called in England bands, and the nodular are called ball measures. Nearly the whole of the immense product of iron in England is from these ores, but the English ores, hitherto described, have a smaller percentage of metal, than those on the Company's lands, which are fully as rich as to allow of their being profitably smelted with mineral coal.

In addition to the ores proper to the coal region, there are abundant indications on these lands, of fine red and brown hematitic ores, which produce a very superior iron; and nodular oxide of iron is profusely scattered over the surface in many places; but as these ores always occur in what may be called *accidental* beds, whose extent cannot be ascertained, until nearly the whole is exposed, it is hazardous to rely upon them, as many in this country too well know. They were therefore but little attended to. When the works are established, with the certainty of the regular beds, the accidental ones may be, and no doubt will be resorted to, for it is well known that a mixture of such ores, would much improve the quality of the metal.

This capacity for advantageous mixture, extends, it is believed, through all the iron ores which have been developed—some of them containing what others appear to want; and even the poorest likely to be of great value, in promoting the ready smelting of those more rich. The map No. 4, exhibits the variety which exists of the argillaceous and calcareous ores: a judicious use of proper quantities of these different kinds together, would, in practice, greatly promote the economical manufacture of the metal.

The specific gravity of the different ores has been already given in a preceding page, and is a matter of some importance in the calculations, which are to be made of their value. Dr. Colquhoun, has described in Brewster's Edinburgh Journal, 1827 and 1828, the ores of nine different beds in the Glasgow district. He gives the density of each of their compositions, their mean density is 3.209, which is .199 less than the George's Creek ores; of course the latter is much richer in iron. In order to judge of the quality, a portion from No. 8 and another from the corresponding beds on Hill's Run, were hastily operated on in the dry way: the iron did not all separate from the slag, which was black and heavy; the portions of iron that separated, weighed in each case 25 grains, omitting fractions. The iron was soft and appeared to be very superior. The experiments would have been repeated, but there was not time.

It is confidently expected that all these ores will produce good iron; they appear to be unusually free from deleterious associations: slight traces of sulphuret of iron, so common

with most ores, have been met with in only one of the beds, and phosphate of iron, so injurious to the quality of the metal of many establishments, has not been found at all.

The quality of the coal, too, is believed to be such as to fit it peculiarly for use in the smelting of the ores. It will be remembered that none of the upper and important beds have the slightest trace of sulphur in their composition; and the small proportion of bitumen renders it suitable, as is the case with some of the Welch coal, to be used in the raw state with or without heated air.

The next important feature in the existence and quality of these mineral beds is the extent of them, and the ease with which they may be mined and worked. The undisturbed regularity in this coal region, and the absence of any dikes or faults will justify, it is believed, a measurement and estimate on the supposition that the beds of coal and ore (except the hematites, &c.) are continuous along the region where the map would indicate their existence. The quantities then of both will be given from measurements, which can be easily verified on Map No. 3. The beds of coal will be designated by the letters which have been affixed to them on Maps No. 3 and 4; and although the actual weight, as deduced from the least heavy, is 2322 pounds to the cubic yard, for the convenience of calculation, the cubic yard will be considered throughout as equivalent to a ton.

For the areas of the beds marked A. B. C. and D. the area of the upper bed D. will be taken, which measures on the map: 3267 acres.

The thickness of these beds is in the aggregate 12.5 feet, say 4 yards: then according to what has been observed in regard to the weight of the coal, $4 \times 4840 = 19,360$ tons per acre. This multiplied by 3267, the number of acres, gives (logarithmically) $= 63,249,100$ tons.

The area of E. will be taken to represent the area of that bed as well as of those marked F. and G. It is found to be 2727 acres.

The aggregate thickness is 20.5 feet: say 6 yards only. Then $6 \times 4840 = 29,040$ tons per acre. This multiplied by the area, gives 79,192,100 tons.

The areas of H. I. and K. will be represented by that of I.: amounting to 1593 acres. Their aggregate thickness is 8 feet: for which, according to the plan of taking a minimum and making every possible deduction, 2 yards will be allowed.

$$\begin{aligned} \text{Then } 4840 \times 2 &= 9680 \text{ tons per acre;} \\ &= 15,420,200 \text{ tons.} \end{aligned}$$

We have then coal in the beds

$$\begin{aligned} \text{A. B. C. and D.} &= 63,249,100 \text{ tons.} \\ \text{E. F. and G.} &= 79,192,100 \\ \text{H. I. and K.} &= 15,420,200 \end{aligned}$$

Making in the whole on the Commonwealth Tract, 157,861,400 tons of Coal.

As the beds of stratified ore, shown in Map No. 4, are found to accompany the 8 feet coal bed, marked D., wherever it is seen, the quantity of iron ore they will furnish can be pretty nearly calculated. Rejecting all above the 8 feet coal, there are still seven beds having an aggregate

thickness of 10.7 feet ; but although those stratified ores never disappear, they vary sometimes in thickness, and therefore, as a minimum, the thickness will be taken at 7 feet. Their mean density is 3.408, which gives the weight of a cubic foot 213lbs. then $213 \times 7 \times 9 = 13419\text{lbs.}$ $= 6$ tons, less 3lbs. to the square yard, and $6 \times 4840 = 29040$ tons to the acre. Now the area of D. has been found equal to 3267 acres: and reckoning the extent of the iron ore beds at only as much, we shall have over the whole tract $29040 \times 3267 = 94,873,000$ tons of iron ore.

The subject of quantity may be briefly dismissed in saying that every acre contains, after the most prodigal discount, the materials, i. e. the ore and the fuel, for making upwards of 9000 tons of cast iron.

For the manufacture of this product to that or a much greater amount every year, many favourable sites could be found on both tracts: but the investigations of the undersigned have not yet led them to the minute calculations which would be required before constructing the necessary machinery. One place, however, the level ground on both sides of the creek, near the mouth of Koontz's Run, and at the foot of Dug Hill, struck them as extraordinarily favorable for convenience and economy. The works which could be erected there would have every advantage in the nearness of the ores, the fuel, and the flux; and the operation of extracting all these minerals will be attended in every opening on the tract (in consequence of the position of the beds, which are throughout inclined to the creek, as shown on Maps Nos. 5 and 6) with no expense for the drainage of accumulating water, or delay until it shall have been drawn off.

The facilities for conveying the products of such construction to market, are seen in Map No. 1, and have been before slightly adverted to. Two modes of egress readily suggest themselves. The one through the saddle by Preston's, which is the nearest to Cumberland—the other rather more circuitous, but probably embracing a greater extent of interest and future profit.—Should uses be made of the formations there, at all commensurate with the profit to be derived from them, there is little doubt but that both routes would be occupied.

In relation to the first, the egress is not proposed to be made on the surface, as but a comparatively small part of the coal could be taken out on a level or with an advantageous grade: but when it is recollected that the bed of coal (D) will lay under the surface there at a depth of about two hundred feet (as near as can be estimated without measurement) a reference to Map No. 3, and the following out of some of the parallels, will readily show that the greatest part of the fourteen foot coal on the east side of the creek could be carried out on a level, or a grade but slightly different, through the excavation which could be made profitably in that eight foot bed. It was with that view that the company acquired the slip of ground which is marked in parallel broken lines on Map No. 1, running north to the valley of Preston's Branch. There it meets the location of the Rail road of the Maryland Mining Company, which extends to the Potomac, near Cumberland. It is to be considered that in making this excavation, the materials excavated are exactly the products which are available in the market, and that the company would not be tunnelling, but mining. In the active hands of the Maryland Mining Company, their projected improvements will doubtless go on, and as soon as made, the George's Creek Company, by commencing their excavation immediately at the northern end of their property, would be ready to furnish articles of carriage for the Rail road.

As yet no calculations could be made with regard to the ability of the roof and walls of the drifts to support themselves: *that* can only be ascertained by actual experiments. Should it, as is now presumed, be the case that no extra walling is required, the excavation will pay for itself: if not, subsequent examinations, and not the opinion of any one now, will determine the amount of necessary expense.

It formed no part of the plan of the undersigned, to locate up to this time any route for a Rail road, or otherwise; and therefore with regard to the communication down the Creek, they do not speak from actual measurements, but only from a general knowledge of the country. It agrees perfectly with that knowledge and with the appearance of the Map No. 1, to state that a road could be made from about the centre of the Commonwealth tract to the Potomac, ten or eleven miles above Cumberland; which would not be more than twenty miles in length, and would not fall more than forty feet to the mile. It is believed that the configuration of the country would allow a line, of that depression or less, to pass down the valley of George's Creek—gradually going further and further to the east of the creek, until when opposite the mouth of Bartlett's Run or Mill Run, the elevation would still be sufficient to pass without deep cutting through one or other of the depressions which have been before spoken of as existing there. The passage over those depressions would open then into the valley which lies between Dan's Mountain proper, and the limestone ranges, which have been already described, as interposing themselves between that mountain and the Potomac.

The glen of the little stream which joins the Potomac to the south of Warrior Run would then indicate the proper direction to the river. Should the proposed feeder for the Chesapeake and Ohio Canal be constructed as exhibited on the map, it is expected that the water (which has a very little fall in that part of its course) will be backed to the mouth of the stream. In that event there would be a navigation from that point to Cumberland: and if not, the character of the country would allow a Rail road, at small expense, to be continued to the head of the feeder, or five miles further, to the town itself.

If to be mere *carriers* of the articles of the coal region could induce persons to invest such large sums as have been appropriated to two great works first proposed to pass along this very ground, the undersigned believe that to be the *owners* of the articles, and at the same time carriers, must be a great deal more desirable and profitable.

Of course they do not offer any detailed estimates of the cost of construction of said road. It is presumed, in accordance with all the estimates which have been made in this region, that a road possessing sufficient solidity for horse power, or light steam engines, could be prepared for use at an average expense of \$5000 per mile. This would make the entire probable cost of a road to Reid's, about \$100,000: the carriage of fifty thousand tons of coal (reckoning transportation at one cent per ton per mile) would return a handsome interest on this investment.

In this estimate there have been taken into consideration none of the circumstances which, in the practical operation of things, must exercise a considerable influence over the difficulties of the undertaking and the amount of the outlay—such as the peculiar position of the Company as the largest, and if they choose, the most influential of the land owners between Cumberland and the Alleghanies—their ownership of the timber which would construct a thousand miles of rail road were it wanted—and their ability to manufacture for themselves the metal of all others

most valuable for the purposes of such a road, without being affected in any other way than advantageously by the present and likely to be continued high prices of iron. Before leaving this part of the subject one other suggestion might be made which would be, it is thought, of practical importance, viz: the use of cast iron rails instead of the wooden string pieces and rolled iron bars which are in general use. The advantage would be that they could be made by the Company as soon as required, and that bars three and a half inches square, supported every four feet, would bear the weight of very heavy engines, and yet would not cost more than \$1000 per mile, for a single track. By care in the casting, and by modes of trial which are at hand afterwards, rails could be selected free from any considerable flaw, and fitted as well as any other for the purpose of transportation.

The construction of this Rail road and the erection of furnaces which would exhaust the ore of one acre per annum, were allowed for in the capital which by the charter the undersigned were permitted to have subscribed. It is supposed, upon information which they have received without any particular research, that such iron works, including the forges for converting the pig into about three fourths of its weight of bar iron, would cost

The Rail road will cost,	-	-	-	-	-	-	-	-	\$160,000
Leaving for contingencies	-	-	-	-	-	-	-	-	40,000

To make up the whole capital of	-	-	-	-	-	-	-	\$300,000
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It is next to be shown how a profitable interest can be had on this investment. It has been already remarked that the carriage of fifty thousand tons of coal per annum would yield a handsome interest, setting down the charge for transportation at 1 cent per ton per mile: there is on 20 miles 20 cents per ton—then $50,000 \times 20 \text{ cents} = \$10,000$, = 10 per cent on the investment.

But the city of Baltimore alone consumes annually more than one hundred thousand tons—the city of Philadelphia, some time since, more than three hundred and fifty thousand tons—and the city of Washington more than fifty thousand tons. Every ton then that is carried on this Rail road, above fifty thousand tons, yields to the Company its whole transportation clear profit: and all this is independent of the profit which they must receive on the property of the article itself; for it must never be lost sight of that other people are burning their candles for them at both ends in being furnished by those who are at once owners and carriers.

If they can sell a bushel of their coal in Washington at - - - 12½ cents which is about one half, or less, of what it goes for now, they are making

a profit on the difference between the cost of transportation on the canal to Washington, per bush.	-	-	-	-	06 cts.
Do. do. on ten miles of dam above Cumberland,	-	-	-	-	00½
Excavation and delivery into boats exclusive of Rail road transportation,	-	-	-	-	02
Contingencies of divers kinds,	-	-	-	-	00½
					<u>09</u>
Amounting to	-	-	-	-	03½ cents.

This profit on 50,000 tons or 1,500,000 bushels, amounts to 52,500 dollars, which of itself would be a good per centage on the entire capital. If they sell it for the present value from 25 to 30 cents per bushel, the profits they would make would be much larger.

With regard to the iron works, the reasonable expectation of profit is no less well founded.

A ton of pig-iron can be made for \$15.

It is sold now for (*at the lowest*) 35.

Leaving a profit of \$20 per ton.

The investment of \$160,000 is calculated to produce 10,000 tons per annum, which if sold at the furnace for \$25 (which is very far below what it could at present nett) would make a profit of \$10 per ton, or in all \$100,000 per annum on the capital invested.

If this product be converted into bar or Rail road iron, it will be equivalent to about 7000 tons.

The cost, after such conversion, will be (added to the original cost,)	\$ 30
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The present importing price is \$70 per ton : it may be safely assumed as worth	
at the forge, - - - - -	60

Leaving a profit of - - - - -	\$30
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on 7000 tons, \$210,000 in all. This is independent of the coal trade, and independent of the very considerable profit which will be made if the market price is substituted for the assumed price at the furnace, and the company delivers it on its Rail road.

In addition to these extraordinary profits, the company have still other ways of increasing their annual receipts. The materials consumed in the production of 10,000 tons of pig iron are of

Coal, about	60,000 tons.
Iron Ore,	30,000
Limestone,	10,000
	100,000
In all,	100,000 tons.

The privilege of excavating these materials for any other manufacturers who might desire to exercise it under a rent or lease, would not be extravagant at 50 cents per ton, which gives \$50,000 per annum for each and every such privilege. If the present price of iron continue there might be a number of such privileges profitably exercised.

Besides these very handsome returns upon the capital, there would be in the effective organization and operations of the company many other modes of rendering the existing products of the lands which now languish for a market, available. There are, it is believed, other mineral deposits, such as fire-clays, &c., not only of practical use, but bearing a selling price : and the thousands of acres which have never seen the sun for the dense forests which cover them would furnish for years an unexhausted supply of timber for many purposes. Considerable portions of the lands are covered with white pine—enormous trees of white oak grow over extensive districts, while locust, ash, black, red and Spanish oak, walnut, hickory, maple, sugar-maple, poplar, &c. &c., are met with in almost every part.

The fertility of the soil too, for agricultural purposes, is another feature of moment in considering any scheme which would involve the assistance of many working hands. The rich returns of the earth, and the low price of provisions, would render labor likewise low, and the entire

absence of a necessity for going off the Company's lands to find raw material for almost any manufacture, impress a characteristic of unity and value upon the lands, which nothing but their great extent over and above the richness and variety of their products could give.

It was the intention of the undersigned, before terminating this memoir, to have given a chapter that should embody the results which had been previously and under different heads arrived at; but it has already reached a length beyond what they hoped, so that they can only briefly allude, in conclusion, to a few of the most prominent results of their investigations.

It will be acknowledged then that the lands of the George's Creek Company are in the heart of the coal formation. Those immense deposits of coal and iron ore, which elsewhere (and in some cases in the same basin) are elevated almost beyond sight or avail, or overlaid by a heavy covering of soil, are here either near the surface of their low lands, or develop themselves at no great elevation in the numerous ravines which intersect the highlands. The enormous amount which rigid measurement and calculation have shewn to exist, do not include all the wealth in this regard which belong to them: but beds of value exist below those which have been developed, at a depth not near so great as has been found very profitable to sink in England.

These deposits exists too in the most convenient position for economical working. The dip of the beds is, on both sides, of the creek downwards: so that the drainage is carried on spontaneously: and the excavation will be made by galleries or drifts without any expense or trouble in sinking shafts.

After the minerals are extracted, facilities exist for conveying them cheaply to market: so that any quantity over 50,000 tons, will, besides, paying the interest and expenses for the construction of a proper road, (which cannot cost more than \$130,000, or \$140,000,) nett a clear profit of 20 cents per ton. And for those which are retained to be manufactured, before being sent to a market, the facilities of working are not less striking. All the materials for the production of iron are at hand—almost at the door of the furnace. That furnace can be built with the sand-stone, carried not one hundred yards from its hitherto undisturbed bed, and with the timber which was cut down in clearing the very site: the coal for fuel can be almost thrown in from the mine, while the ores and the limestone are side by side, within sight of the flame. Or if any should prefer to make or refine the iron with charcoal, there is a supply of wood such as hardly any existing furnace commands.

Nearer the tide-water than any other bituminous coal field of the same mineral purity and value in the United States—there is none in the world, it is believed, which at all rivals it in the extent and quality of its deposits. The useful mineral deposits of a single acre, if they were paid for by the ton (and that cheaply) would be worth \$40,000, and if the company become their own factors and carriers, the same acre, with the investment of the small capital allowed by law, would more than double that sum.

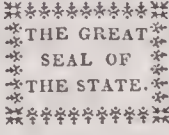
In one word the undersigned find themselves forced to the expression of their conviction, that in no other place on the earth has Providence allowed such returns for scientific research and honest enterprise, as are prodigally heaped up here.

J. H. ALEXANDER,
P. T. TYSON.

Baltimore, October, 1836.

The investigations detailed in the preceding report had been concluded, when, in accordance with the Charter, the following authentications were transmitted to the gentlemen named below, with the request that they would act as Commissioners to fix some value upon the land, viz:

The STATE OF MARYLAND, to Professor JAMES RENWICK, of Columbia College, New York, Greeting: Be it known, that reposing special trust and confidence in your prudence and honesty, you are appointed one of the persons to estimate and fix the price or value of the Lands of John H. Alexander and Philip T. Tyson, mentioned and provided for by an act of the General Assembly of this State, passed at December Session, 1835, entitled, An Act to Incorporate the George's Creek Mining Company; to hold the said appointment until you shall be duly discharged therefrom, and to execute the duties thereof with diligence and fidelity, without favor, affection, or partiality, according to Law.

THOS. W. VEAZEY.  Given under the Seal of the State of Maryland, this third day of June, in the year of our Lord one thousand eight hundred and thirty-six.

THEODORICK BLAND, *Chancellor.*

COUNCIL CHAMBER, *Annapolis, September 29, 1836.*

I certify that the foregoing is a true copy of the Record of the Original Commission issued to Professor Renwick.

THOS. CULBRETH,
Clerk of the Council.

Baltimore, 1st September, 1836.

PROFESSOR DUCATEL:

DEAR SIR,—The act of the Legislature at the last session incorporating the George's Creek Coal and Iron Company, authorized us to make selection of some competent person, who, in conjunction with one commissioned by the Governor, should examine into, consider and fix on oath the value of the lands belonging to the Company.

It is expected that the Commissioners should personally inspect the lands: though, as very minute surveys have been made of one tract, so far as that is concerned the labor may be somewhat diminished. Those surveys will be found useful also in furnishing prompt answers to various questions which may be interesting in forming an estimate.

The general principle upon which to form that estimate is, we believe, that the lands be considered and valued under the Charter, i. e. under the assumption that the subscription author-

ized by the Charter, and necessary for rendering available the lands or any part of them, has been or can be made. The other details must be, of course, left to the Commissioners.

Having now stated the object and duties of the Commissioners, we have next to beg the favor of you to accept the charge of making the necessary inquiries on our behalf: and to signify the same to us as soon as convenient. The period of meeting your fellow Commissioner (Professor Renwick) you can arrange to suit yourself, provided it can be fixed before the 28th instant.

We are, very sincerely and respectfully,

Your friends and servants,

J. H. ALEXANDER,
P. T. TYSON.

Baltimore, 26th September 1836.

GEORGE WINCHESTER, Esq.:

SIR,—We have received authority as Commissioners, under the act of the Legislature, to value the lands belonging to the George's Creek Coal and Iron Company: while the same act provides for the appointment by ourselves of a third person to co-operate with us. The subject is now before us, and we have to request that, if your convenience will permit, you will do us the favour to accept the appointment, and to assist at our deliberations.

We are, sir, very respectfully,

JAMES RENWICK,
J. T. DUCATEL.

The Commissioners accordingly met, and after an examination of the ground by the two first named, Professors Renwick and Ducatel, and the consideration of the maps, &c. returned the following report.

To the Commissioners appointed to receive subscriptions to the capital stock of the George's Creek Coal and Iron Company—Present.

The undersigned appointed, as will appear by the annexed copies of their several commissions, in pursuance of an act of the General Assembly of Maryland, entitled, An Act to incorporate the George's Creek Coal and Iron Company, to estimate and fix the value of the lands of J. H. Alexander and Philip T. Tyson, to be subscribed for, and constitute a part of the capital stock or property of said Company—have had the subject under their consideration and find the following facts:

First: That the said J. H. Alexander and Philip T. Tyson, are the proprietors of eleven thousand acres of land, more or less, in Allegany county, on and near George's Creek and Savage Mountain, called Commonwealth and Beatty's Plains.

Secondly: That these lands contain large quantities of bituminous coal and iron ore, and lie within a distance of from fourteen to twenty miles of the line of the Chesapeake and Ohio

Canal; and that facilities exist for the construction of Rail roads from the mines to the canal at a moderate cost.

Thirdly: That the coal and iron ore, after careful examination, are ascertained to be of good quality, and lie in positions to be easily worked and removed at comparatively small expense.

Fourthly: That if an adequate capital were furnished, such as that contemplated by the act, of \$300,000, and applied to the working of the mines and the establishment of manufactories of iron, well conducted, an annual revenue might be derived from them, equal to the interest upon an amount of \$800,000, over and above the interest on the money capital.

They therefore report that the aforesaid lands of J. H. Alexander and Philip T. Tyson, ought to be estimated, when subscribed, as part of the capital stock or property of said Company, at eight hundred thousand dollars.

Witness our hands the twenty-sixth day of September, 1836.

JAS. RENWICK,
J. T. DUCATEL,
GEO. WINCHESTER.

UNITED STATES OF AMERICA.

STATE OF MARYLAND—*To wit:*

I, James B. Latimer, Notary Public, by Letters Patent under the Great Seal of the State of Maryland, commissioned and duly qualified, residing in the City of Baltimore, in the state aforesaid, do hereby certify, attest, and make known, that on the twenty-seventh day of September, in the year eighteen hundred and thirty-six, personally appeared before me, the within named James Renwick, Julius T. Ducatel and George Winchester, whose names are subscribed to the foregoing report, and made oath in due form of law, that the said report and estimate, made as aforesaid, in pursuance of the act of Assembly, December session, 1835, ch. 382, is just and true to the best of their knowledge and belief.

In testimony whereof, I, the said Notary, have hereunto set my hand, and affixed my Notarial Seal, the twenty-seventh day of September, in the year of our Lord one thousand eight hundred and thirty-six.

* SEAL. *

JAMES B. LATIMER, *Notary Public.*

After the preceding statements and documents were in type, there were received data for some of the estimates, more detailed and exact than had been in the power of the framers of the Report to procure before. It was thought better to add those data, with this explanation, as an Appendix, rather than attempt an alteration in the body of the Report, which would have been both tedious and costly.

In one or two items, the following estimates will be found to differ from the statements in the Report, but always in being *less* than what is allowed there. It is presumed that this discrepancy cannot be made an objection to either; although if the same details as are here included had been at hand, they would undoubtedly have been taken, as a nearer approximation to the truth.

The first estimate, furnished by a gentleman whom a great many concurrent testimonies have at divers times proved to be perfectly competent to give an opinion, is besides that opinion, founded, it is believed, upon the results of actual practice.

ESTIMATE *of the cost of establishing Works capable of manufacturing Seven Thousand Tons of Wrought Iron, per annum, on the lands of the GEORGE'S CREEK COAL AND IRON COMPANY, in Allegany county, Maryland; and of the cost of manufacturing Iron.*

1. Estimate of the cost of a Blast Furnace, with Blowing Apparatus, to be constructed before any other works are established.

The materials supposed to be found on the spot, and the waters of George's Creek to be sufficient to drive the blast of a single Furnace 50 feet high, 14 feet boshes, 5 feet 6 inches trundle heads:

Stack,	. . . . .	\$5,250
Lining,	. . . . .	250
5 Tons Castings,	. . . . .	500
Wrought iron work,	. . . . .	300
Hearth-stone and tymph,	. . . . .	300
Blowing apparatus, water wheel, and blast pipe,	. . . . .	2,000
Top and moulding house,	. . . . .	1,250
Stamping mill,	. . . . .	750
Hot air apparatus, and water tuyeres,	. . . . .	550
		<hr/>
		\$11,150
		<hr/>

Therewith may be added, that the cost of the furnace and blast works is not less than \$100,000 - and some further labour will be required in building roads, &c. &c. - making a large sum - which however is not to be forgotten.

2. Estimate of the cost of a Blast Furnace, (of the same dimensions,) erected after one Blast Furnace and a Foundry are in operation.

Masonry and lining, as before,	\$5,500
5 Tons of Castings, <i>a</i> \$25.	125
Wrought iron,	300
Hearth, &c.	300
Top and moulding house,	1,250
Hot-air apparatus, and tuyeres,	425
	<u>\$7,900</u>

3. Estimate of the cost of accessories to complete an establishment of Four Blast Furnaces; three of them driven by steam.

High Pressure Engine of 60 horse power, with boilers,	\$6,000
Blowing cylinders and gearing,	2,500
Blast pipes,	500
Water regulator,	250
	<u>\$9,250</u>

4. Estimate of the cost of a Foundry, with one air furnace.

Furnace and chimney,	\$1,500
Crane,	300
Boxes and patterns,	1,000
Moulding house,	1,500
	<u>\$4,300</u>

5. Estimate of the cost of a Double Refinery, or run out fire.

7 Tons Castings, <i>a</i> \$30.	\$ 210
4 Water tuyeres,	20
Stack,	150
Water-pipes, blast-pipes, and valves,	120
Wrought iron work,	60
	<u>\$ 560</u>

6. Estimate for the Hammer.

Helve, 4 tons; other castings, 12 tons; = 16 tons, <i>a</i> \$30.	\$ 480
Patterns, labour, brasses, &c.	1,250
Wrought iron work,	500
Foundation,	500
	<u>\$2,730</u>

7. Shears for puddle works, fitted, \$ 250 |

8. Estimate for Puddle Rollers.

4 Tons Castings, a \$70.	\$ 280
Fly wheel, 15 tons, fitted,	1,000
Rollers, and other castings, 26 tons,	1,400
Turning rollers,	200
4 Screws,	250
Labour and building materials,	1,000
Brasses and wrought iron,	770

\$4,900

9. Puddle Furnace, complete,

 \$1,000

10. Scrap Furnace,

 \$1,250

11. Estimate of Machinery for Merchant Mill.

Fly wheel, 22 tons,	\$2,000
7 Pair Rollers, and other castings, 40 tons, a \$70.	2,800
4 Screws,	200
Brasses and wrought iron,	750
Labour, patterns, and putting up,	1,500
Turning rollers,	450
2 Pair shears and fitting,	1,000
Cast iron flooring,	1,500
Tools, &c.	1,250

\$11,450

12. Steam Engine of 120 horse power, with boilers, to drive puddle rolls and merchant mill, \$ 9,000

13. Buildings of Puddle Works, 12,000

14. Buildings of Merchant Mill, 8,000

GENERAL ESTIMATE.

1. First Blast Furnace,	\$11,150	
2. Three additional Furnaces, \$7,900 each,	23,700	
3. Accessories,	9,250	
	<hr/>	\$44,100
4. Foundry,		4,300
5. Three double run out fires, \$560 each,		1,680
		<hr/>
		\$50,080

			\$50,080
6.	Hammer,	\$ 2,730	
7.	Shears,	250	
8.	Puddle Rollers,	4,900	
9.	Fourteen Puddle Furnaces, \$1,000 each	14,000	
10.	Scrap Furnace,	1,250	
		<u>23,130</u>	
11.	Machinery of Merchant Mill,	11,450	
12.	Steam Engine,	9,000	
		<u>20,450</u>	
13.	Buildings of Puddle Works,	12,000	
14.	Buildings of Merchant Mill,	8,000	
		<u>20,000</u>	
			<u>\$113,660</u>

ADDITIONAL BUILDINGS.

House for Superintendent,	4,000	
Four houses for Managers and Clerks,	10,000	
Accommodations for 400 workmen and families,	25,000	
	<u>39,000</u>	
		152,660
Contingencies, 10 per cent.		15,270
		<u>167,930</u>
Total cost of works,		<u>\$167,930</u>

COST OF MANUFACTURE.

1.	Estimate of the cost of one ton of Pig Iron.	
	3 tons of Ore, a \$1.	\$ 3 00
	1 ton Limestone,	1 00
	4 $\frac{3}{4}$ tons Coal,	4 75
	Workmen, &c.	4 25
		<u>\$13 00</u>
2.	Estimate of the cost of one ton of Plate Iron.	
	23 cwt. Pig Iron, a \$13 per ton,	\$14 95
	Coke, from 12 cwt. coal,	60
	Refiner's wages,	1 00
	Coking, tools, &c.	35
		<u>\$16 90</u>

Nothing for maintenance & repairs

3. Estimate of the cost of one ton of Puddled Iron.

21½ cwt. Plate Iron, @ \$16 90 per ton,	\$19 58
Stocking,	10
Coal, 17 cwt.	87
Coal for Steam Engine,	25
Puddler's wages,	3 00
Shingling,	65
Rolling and Stamping,	80
Incidental Expenses,	1 00
	<hr/>
	\$26 25
	<hr/>

4. Estimate of the cost of one ton of Merchant Iron.

22½ cwt. Puddle Bar, @ \$26 25 per ton,	\$29 23
Cutting and stocking,	50
Piling,	20
Heating,	1 00
Coal, 10 cwt.	50
Coal for Steam Engine,	25
Rolling and straightening,	2 00
Cropping,	30
Incidental expenses,	75
	<hr/>
	\$34 73
	<hr/>

5. Estimate of the cost of one ton of Boiler Plate.

24 cwt. Puddled Iron in billets,	\$31 50
15 cwt. Coal,	75
Coal for Steam Engine,	25
Rolling,	4 00
Trimming,	60
Incidental expenses,	1 00
	<hr/>
	\$38 10
	<hr/>

*This will be a poor estimate
manufactured in the way*

TOTAL COST OF MANUFACTURE.

750 tons Pig Iron, <i>a</i> \$13,	.	.	.	.	.	.	\$ 9,750	
6000 tons Merchant bars, <i>a</i> \$35,	.	.	.	.	.	.	210,000	
1000 tons Boiler Plate,	.	.	.	.	.	.	38,100	
							<hr/>	
							257,850	
Cost of superintendence,	.	.	.	.	.	.	12,500	
							<hr/>	\$270,350

The value in New York, at the present moment, would be :

750 tons Pig, <i>a</i> \$50,	.	.	.	.	.	.	\$ 37,500	
6000 tons Merchant Bars,	.	.	.	.	.	.	720,000	
1000 tons Boiler Plate,	.	.	.	.	.	.	200,000	
							<hr/>	957 500
								<hr/>
						Gross Profits,	.	\$687,150
Deduct commissions,	.	.	.	.	.	.	\$50,000	
Freight and transportation,	.	.	.	.	.	.	27,150	
							<hr/>	77,150
								<hr/>
						Nett profits,	.	<u>\$610,000</u>

JAMES RENWICK.

New York, October 15, 1836.

2. STATEMENT of the expenses on a Rail road proposed to be carried from the mines of the George's Creek Coal and Iron Company, upon the hypothesis that the road is 20 miles in length, and descends the whole way at a rate of 40 feet per mile. The quantity to be delivered is limited at 50,000 tons, and the expenses are expressed in their relation to each ton.

A good horse can draw up the assumed grade a weight of 5 tons; the number of cars weighing that much will contain 12 tons of coal, which will be the load carried down in one day. The carriage back of the empty cars consumes the next day. So that the productive effect of each horse is equivalent to the delivery of six tons per day.

In the 200 working days each horse would at that rate deliver 1,200 tons; and to deliver the entire 50,000 in that time, (allowing the usual discount for sickness and accidents,) would require 50 horses; and a similar allowance for the cars, will give 300 as the proper number.

The construction of the road is estimated at \$100,000—the annual interest of which is equal on 50,000 tons, to a charge per ton of

50,000 tons, to a charge per ton of	\$0.1200
The repairs of the road, 15 per cent. or \$15,000,	.3000
300 cars = \$22,500,	.0270
Repairs of cars, \$2,500,	.0500
50 horses or mules would cost \$3,000,	.0036
Renewal of stock, \$1,000,	.0200
Feeding 50 mules, - - - \$4,562 50 per annum.	
Harness, shoeing, repairs, &c. 1,037 50—\$5,600 00,	.1120
12 drivers, \$2,500,	.0500
Agencies at mines, wharf, &c. \$2,500,	.0500
Total cost per ton,	<u>\$0.7226</u>

3. The use of steam, as the moving power, would be a little more economical, both in the immediate outlay of capital and under all the circumstances in the annual expense.

Two trips per day could be in this way made, and only 200 cars would be required. We have then

2 Steam Engines, a \$12,000,	\$0.0144
Repairs of Engines, 30 per cent. \$4,000,	0.0800
Fuel, \$375,	0.0075
Oil, tools, &c. \$400,	0.0080
2 sets of Engineers and Firemen, \$2,000,	0.0400
200 cars, \$15,000,	0.0180
Repairs, as before,	0.0500
Road, construction and repairs, as before,	0.4200
Agencies, as before,	0.0500
Total cost per ton,	<u>\$0.6879</u>

4. We shall assume the cost of conveying the coal from the mouth of the mine to the wharf on the Potomac, to be as per preceding statement, (2)	\$0.7226
It is now delivered at the mouth of the drift for	.3000
Expense of erecting wharf and fixtures, \$2,000,	.0048
Hands for loading and unloading, &c. \$1,000 per annum,	.0200
For 25 boats, of which 20 constantly employed could deliver in the working season 50,000 tons, the outlay would be (Baltimore prices,) \$20,000,	.0240
Repairs and accessories, \$5,000,	.1000
To travel day and night, 80 horses would be required, for which an allowance of \$6,000 would be sufficient,	.0075
Renewal &c. \$2,000,	.0400
Feeding 80 horses 250 days, \$5,000,	.1000
Other expenses, shoes, &c. \$1,600,	.0320
Wintering horses, \$1,000,	.0200
Hire of 40 men and 40 boys for 200 days, <i>a</i> \$1 75 man and boy, \$14,000,	.2800
Tolls, present tariff,	.9800
Toll on boat, 2 cts. per mile, 500 trips, back and forth, \$3,920,	.0784
Wharf at Georgetown, with fixtures, \$10,000,	.0120
Labourers' hire, \$4,000,	.0800
Agent, \$800,	.0160
Travelling Agent on Canal, \$1,000,	.0200
Utmost tolls allowed by law,	.9800
	<hr/>
	3.8173
Add for loss, waste, &c. 10 per cent.	.3817
Office account, \$10,000,	.2000
Profit of mines, \$1 per ton,	1.0000
	<hr/>
	<u>\$5.3920</u>

5. These statements shew satisfactorily that in allowing a reasonable profit on every part of the establishment, and the profit of \$1 per ton to the owners of the mines,—the utmost tolls that can be charged on the Canal, and with no permission to the boats to bring back any return freight, the whole cost at Georgetown cannot exceed \$5 40 per ton.

If the present tariff of tolls on the C. and O. Canal be continued, as there is every assurance that it will, from this amount must be subtracted 98 cts. per ton, reducing it to \$4 42; while every reduction from the prices allowed for the cost of different parts of machinery, cars, &c. on account of the facilities which will be afforded in the neighbourhood, in contrast with the Baltimore prices, must be set down as clear gain.

A FARTHER
SUPPLEMENT TO THE ACT
TO INCORPORATE

THE GEORGE'S CREEK MINING COMPANY.

WHEREAS, by the Act entitled 'An Act to incorporate the George's Creek Mining Company,' passed at December Session, in the year eighteen hundred and thirty-five, and the Supplement thereto, it is provided that the capital stock of the Company thereby incorporated shall consist of three thousand shares of one hundred dollars each, in addition to the lands of John H. Alexander and Philip T. Tyson, which are required to be subscribed in manner and form as is therein particularly mentioned: and whereas it is represented to this General Assembly, that the whole amount of the money capital authorized as aforesaid has not been subscribed, but that the said Alexander and Tyson are willing to proceed with the organization of the Company incorporated as aforesaid, and to erect on their aforesaid lands costly and extensive works for the manufacture of iron, provided the said Company, after its organization, shall be permitted to take additional subscriptions to its capital stock, to the aforesaid amount of three hundred thousand dollars:

Be it enacted by the General Assembly of Maryland, That if at the time of the organization of the company incorporated by the aforesaid act and its supplement, the aforesaid sum of three hundred thousand dollars shall not have been subscribed to the capital stock of the said company, as by said acts is provided, it shall and may be lawful to and for the President and Directors thereof, at any time or times thereafter, and on such notice as they may deem expedient, to receive additional subscriptions to the capital stock of the said company; *provided,* That the additional stock hereby authorized, together with the stock which shall have been subscribed at the time of the organization of the said company, shall not exceed the sum of three hundred thousand dollars; *And provided also,* That a cash capital of thirty thousand dollars at least shall be actually subscribed, before the company incorporated by the provisions of the aforesaid acts shall go into operation; which said part of the capital stock, when so subscribed, shall be certified in writing by such persons as the Treasurer of the Western Shore shall appoint to ascertain and report said facts to said Treasurer; *And provided also,* That if the debts of the said company shall at any time exceed the whole amount of capital subscribed and paid in to the stock of said company, the Directors, for the time being, shall become personally liable for the payment of such excess.

2. *And be it enacted*, That it shall be the duty of the President and Directors of the said company to call for such additional instalments to be paid on the cash capital subscribed, that the sum of thirty thousand dollars at least shall become payable within four months from the date of the organization of the company.

3. *And be it enacted*, That if the sum of thirty thousand dollars shall not be paid in on account of the cash capital subscribed to said company, within the time hereinbefore limited for that purpose, then this supplement, and every thing therein contained, shall be null and void.

4. *And be it enacted*, That the right of way is hereby reserved to the Chesapeake and Ohio Canal Company and the Baltimore and Ohio Rail road Company, upon any route which the said companies may select for their works, notwithstanding the prior location or construction of any Rail road or Rail roads authorized by the provisions of this act upon such route.

We certify the foregoing to be a true copy of a law which passed both branches of the Legislature of Maryland, at December session, eighteen hundred and thirty-six.

Given under our hands at the city of Annapolis, this first day of February, eighteen hundred and thirty-seven.

GEORGE G. BREWER, *Clerk of the House of Delegates of Maryland.*

JOSEPH H. NICHOLSON, *Clerk of the Senate of Maryland.*

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